



STATEMENT OF BASIS
CAPE FIRE STATION, FACILITY 1608
SOLID WASTE MANAGEMENT UNIT NO. 88
45TH SPACE WING
CAPE CANAVERAL AIR FORCE STATION
BREVARD COUNTY, FLORIDA



PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed in order to inform the public and give the public an opportunity to comment on a proposed remedy to clean up contamination at the Cape Fire Station Facility, Facility 1608. A 45th Space Wing (45th SW) installation restoration partnering (IRP) team consisting of United States Air Force (USAF), United States Environmental Protection Agency (USEPA), the State of Florida Department of Environmental Protection (FDEP), the U. S. Army Corps of Engineers, and various environmental consultants have determined that the proposed remedy is cost effective and protective of human health and the environment. However, prior to implementation of the proposed

Brief Site Description

Facility 1608 is located on Phillips Parkway in the southeast portion of the CCAFS Industrial Area (See Figure 1). The facility was constructed in 1958 and has been used as a fire station throughout its operation. Activities on the site include operation and maintenance of fire-fighting support equipment.

remedy, the 45th SW IRP team would like to give an opportunity for the public to comment on the proposed remedy. At any time during the public comment period, the public may comment as described in the "How Do You Participate" section of the SB. Upon closure of the public

comment period, the 45th SW IRP team will evaluate all comments and issues raised in the comments and determine if there is a need to modify the proposed remedy prior to implementation.

WHY IS CLEANUP NEEDED?

The results of the Resource Conservation and

Recovery Act (RCRA) Facility Investigation (RFI) indicated that several pesticides and a metal (listed in Table 1) are present in the groundwater at levels that could be potentially harmful to human health. Also, a polynuclear aromatic hydrocarbon (PAH) is present in the surface soil at levels that could be potentially harmful to a hypothetical future resident.

HOW DO YOU PARTICIPATE?

The 45th SW IRP team solicits public review and comment on this SB prior to implementation of the proposed remedy as a final remedy. The final remedy for Facility 1608 will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) Permit for Cape Canaveral Air Force Station (CCAFS).

The Clean-up Remedy

The proposed clean-up remedy for Facility 1608 includes (but is not limited to) the following components:

- Natural attenuation of groundwater to remove contaminants through natural processes
- Implementation of land use controls designed to prevent exposure to site contaminant. These include:
 - Prohibition of residential development
 - Protection of site workers
 - Periodic monitoring of groundwater and surface water to document water quality and contaminant levels
 - Posting warning signs on-site

A complete list of land use controls and other protective measures are found in the Facility 1608 Land Use Control Implementation Plan (LUCIP).

The public comment period for this SB and the proposed remedy will begin on the date that a notice of the SB's availability is published in a major local newspaper of general circulation. The public comment period will end 45 days thereafter. If requested during the comment period, the 45th SW IRP team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

Mr. Jorge Caspary
FDEP-Bureau of Waste Cleanup
2600 Blair Stone Road, MS-4535
Tallahassee, FL 32399-2400
E-mail: Jorge.Caspary@dep.state.fl.us
Telephone: (850) 921-9986

The HSWA Permit, the SB, and the associated Administrative Record, including the RFI Report, will be available to the public for viewing and copying at:

Environmental Management, CEV/ESC
Facility 1638, Samuel Phillips Parkway
Cape Canaveral Air Force Station, FL
For public access call (321) 853-0965

This information can also be found on-line at
http://www.mission-support.org/45SW_IRP_EA

The HSWA Permit, the SB, and Facility 1608 Report summaries will be available for viewing and copying at:

Central Brevard Library
308 Forrest Avenue
Cocoa, FL, 32922

To request further information, you may contact one of the following people:

Ms. Teresa Green
Environmental Restoration Element Chief
45 CES/CEVR
1224 Jupiter Street

Patrick Air Force Base, FL 32925-3343
E-mail: teresa.green@patrick.af.mil
Telephone: (321) 853-0965

Mr. Jorge Caspary
See previous contact information

Mr. Timothy R. Woolheater, P. E.
EPA Federal Facilities Branch
Waste Management Division
Sam Nunn Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960
E-mail: woolheater.tim@epamail.epa.gov
Telephone: (404) 562-8510

FACILITY DESCRIPTION

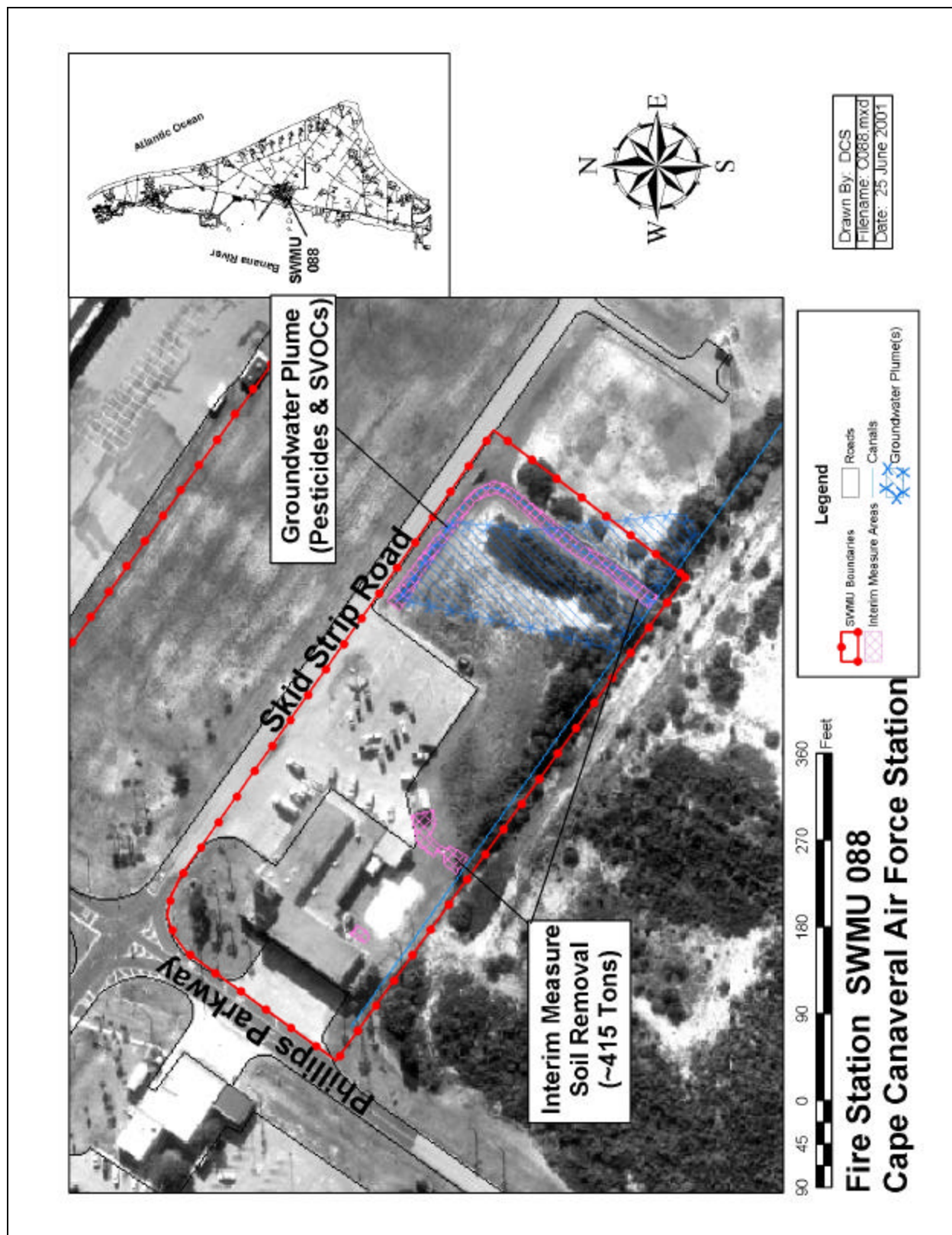
USAF established the 45th SW as the primary organization for the Department of Defense aerospace force programs. Historically, the National Aeronautics and Space Administration (NASA) also performed space launch related operations on the 45th SW property. These operations have involved the use of toxic and hazardous materials. Under RCRA and the HSWA Permit (CCAFS Permit No. FL2800016121) issued by the USEPA, the 45th SW was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) No. 88, Cape Fire Station, Facility 1608.

SITE DESCRIPTION AND HISTORY

Facility 1608 has been in operation as a fire station since its construction in 1958. It supports the operation and maintenance of fire fighting equipment and vehicles. A vehicle wash rack is located on the site and, according to reports, pesticides and herbicides were historically released at the wash rack.

The USAF has conducted the following investigations:

- 1993-1995: A Preliminary Assessment including records search, site reconnais-



In accordance with RCRA Section 7004(b), this Statement of Basis summarizes the proposed remedy for CCAFS Facility 1608. For detailed information, consult the Facility 1608 RFI Report which is available for review at the 45th SW Environmental Management Office (See "How Do You Participate") or on-line at http://www.mission-support.org/45SW_IRP_EA.

sance, and interviews with knowledgeable personnel identified three areas of concerns which warranted further investigation. A Site Investigation (SI) was recommended to collect and analyze the site's environmental media (soil, groundwater, surface water, and sediment) to evaluate the presence or absence of contamination.

- 1993-1995: The SI report concluded that the presence of constituents in soil, groundwater, surface water and sediment might pose a risk to human health and the environment. The SI recommended that a RCRA Facility Investigation (RFI) be conducted to assess the nature and extent of the contamination present at the site, and perform risk assessments to determine if the contamination is detrimental to human health or ecological receptors.
- 1998: An Interim Measure was performed to remove soil contamination found in and around the unpaved areas and the site's drainage swales. The clean-up action resulted in the removal of approximately 624 cubic yards (874 tons) of material.
- 1997-2000: An RFI was performed, detailing sampling and analysis of the site soil, groundwater, surface water, and sediment. These results were used to determine human health and ecological risks. The Human Health Risk Assessment (HHRA) indicated that potential risk exists from the site groundwater and soil. The Ecological Risk Assessment (ERA) indicated that no unacceptable ecological risk is present at the site.
- 2000: A Corrective Measures Study (CMS) was performed in order to select the appropriate remedy for the site. It was determined that monitoring of groundwater and surface water (due to the potential discharge of groundwater into the canal adjacent to the Fire Station) would be needed. Additionally, land use controls would be implemented to ensure hypothetical future residents and industrial workers would be protected from unacceptable

exposure to site groundwater and surface water.

- 2000: A Long Term Monitoring (LTM) Work Plan was submitted in 2000 and LTM was initiated. The 45th IRP Team felt it was incumbent to implement LTM immediately following the CMS in order to ensure that groundwater contaminants were appropriately monitored and tracked.

SUMMARY OF SITE RISK

As part of the RFI activities, an HHRA and an ERA were conducted to estimate the health and environmental risks associated with the site-specific contamination. The risk assessments were performed in accordance with risk management decision processes established by the USEPA, FDEP, and the USAF at the time the RFI was initiated.

The Chemicals of Concern (COCs) identified for human health during the RFI were:

- soil: benzo(a)pyrene
- groundwater: 4,4'-DDD, 4,4'-DDE, aldrin, alpha-BHC, beta-BHC, chlordane, dieldrin, heptachlor, heptachlor epoxide, and arsenic

Sediment at the Facility 1608 was not addressed in the human health risk assessment on the basis of incomplete exposure pathways for all potential receptors. Surface water was evaluated under a wading scenario for hypothetical future residents, and did not pose unacceptable cancer risk or noncarcinogenic hazard under that scenario. A soil removal was performed on the basis of initial RFI data. The goal of the removals was to eliminate potential unacceptable human health risk to current and future site workers and to reduce potential risk to hypothetical future residents. Remaining soils exceed the one in one million (1/1,000,000) cancer risk threshold for the hypothetical future adult and child residents. The primary contributor to this risk was benzo(a)pyrene.

Groundwater exceeded the one in one million

(1/1,000,000) cancer risk threshold and the noncarcinogenic hazard index target of 1.0 for the hypothetical future adult resident, the hypothetical future child resident, the current industrial worker, the future industrial worker, and the future construction worker. Aldrin, chlordane, and heptachlor epoxide are the major contributors to both cancer risk and noncarcinogenic hazard.

Based on the risk management decision process, it was determined that arsenic and chlordane did not pose an unacceptable risk because remaining concentrations did not exceed the Maximum Contaminants Levels established by USEPA for drinking water.

The ERA was conducted to evaluate the possibility that land and aquatic organisms (eco-receptors) may be at risk from site-related contaminants. The ERA was based on laboratory analyses of groundwater, soil, surface water, and sediment samples. Initial data indicated a potential risk from pesticide exposure to aquatic organisms and fish-eating birds. Due to this concern, site-specific data was gathered and an exposure model for fish-eating birds was run using analytical results from fish collected in the Facility 1608 canal.

The ERA concluded that potential risk to eco-receptors from the exposure to and/or ingestion of soil, surface water, and sediment are acceptable. There is no direct path for eco-receptor exposure to groundwater. However, it was determined that surface water should be monitored in conjunction with groundwater. In the event that potentially harmful levels of pesticides begin discharging from the groundwater plume into the surface water, additional protective actions will be implemented.

WHAT ARE THE CLEANUP OBJECTIVES AND LEVELS?

The remedial action objectives (RAOs) are to:

- 1) Protect humans from exposure to shallow groundwater and prevent consumption of groundwater from the shallow aquifer (where contaminant concentrations are

higher than regulatory standards), and

- 2) Prevent unacceptable human contact with site soils.
- 3) Ensure that discharge of groundwater to the canal does not degrade surface water quality below levels that are acceptable for ecological receptors.

Table 1 lists the COCs present at Facility 1608. The first column lists the chemical name, the second column lists the maximum concentration detected in the impacted medium at the Facility 1608 during the RFI, and the last column presents the clean-up level to be achieved at the site.

Please note that through the risk management decision process, several contaminants originally designated as groundwater COCs were determined not to pose an unacceptable risk (See “Summary of Site Risk,” above) and are therefore not addressed by the remedial action.

TABLE 1— CLEANUP GOALS

Site-Related Chemicals of Concern (COCs)	Maximum Detected Concentration	Site-Specific Clean-up Level ¹
GROUNDWATER		
4,4'-DDD	0.8 ug/L	0.1 ug/L
4,4'-DDE	0.1 ug/L	0.1 ug/L
Aldrin	0.46 ug/L	0.005 ug/L
Alpha-BHC	0.021 ug/L	0.006 ug/L
Beta-BHC	0.069 ug/L	0.02 ug/L
Total Chlordane	8.2 ug/L	2.0 ug/L
Dieldrin	1.04 ug/L	0.005 ug/L
Heptachlor Epoxide	0.23 ug/L	0.2 ug/L
SOIL		
Benzo(a)pyrene	0.15 mg/kg	0.1 mg/kg

¹ Cleanup level represents the most stringent value among USEPA and FDEP criteria at the time of the final investigation

CLEANUP ALTERNATIVES FOR CAPE FIRE STATION (FACILITY 1608)

Clean-up alternatives are different combinations of plans to restrict site use and to contain, remove, and/or treat contamination in order to protect public health and the environment. Only two alternatives were considered because of low levels of contamination present at the Cape Fire Station (Facility 1608). The clean-up alternatives considered for the Cape Fire Station (Facility 1608) are summarized below.

No Action: Evaluation of the No-Action alternative is used as a basis for comparison with other alternatives. Under this alternative, no remedial action would be taken to reduce human health risks or restrict site use. No monitoring of COC concentrations in the groundwater or surface water would be performed. It was determined this alternative would not attain the RAOs.

Land Use Controls and Long Term

Monitoring: Under this alternative, material processes such as dispersion, advection, and adsorption would reduce COC concentrations to cleanup levels over time. Groundwater and surface water would be regularly sampled and analyzed to monitor and document the decrease in contaminant concentrations, and to ensure that potentially harmful levels of pesticides are not discharging into the canal from groundwater. In the event that potentially harmful levels of pesticides are detected in the surface water, additional remedial actions will be evaluated and implemented. Data collected during the RFI and other Basewide assessments indicate that contaminant concentrations will likely be reduced below cleanup levels within 30 years. Data will be evaluated annually during LTM. If concentrations are not satisfactorily decreasing, additional remedies will be considered. Additionally, the 45th SW would implement site-specific land use controls and measures to prevent exposure of hypothetical future residents to site soils, prevent consumption of shallow groundwater, and limit

exposure to shallow groundwater. In the long term, this remedy alternative will meet RAOs and will also allow re-evaluation to determine if the remedy is working and provide an opportunity for change if necessary.

The 45th SW, USEPA, and FDEP have entered into a Memorandum of Agreement (MOA), which outlines how land use controls will be managed at the 45th SW. The MOA requires periodic inspections, condition certification, and construction project coordination and agency notification. Site-specific details can be found in the Fire Station (Facility 1608) Land Use Control Implementation Plan (LUCIP).

EVALUATION OF REMEDY ALTERNATIVES

Each cleanup alternative was evaluated to determine how each potential remedy would comply with the four general standards for corrective measures. The four general standards for corrective measures are:

- Overall protection of human health and the environment;
- Attain media cleanup standards;
- Control the sources of releases; and
- Comply with standards for management of wastes

The second alternative (Land Use Controls and Natural Attenuation with LTM) meets each of the above criteria, while the no action alternative remedy would not meet them.

LAND USE CONTROLS AGREEMENT

By separate MOA dated 23 December 1999, with USEPA and FDEP, CCAFSB, on behalf of the Department of the Air Force, agreed to implement base-wide, certain periodic site inspection, condition certification, and agency notification procedures designed to ensure the maintenance by installation personnel of any site-specific land use controls deemed necessary for future protection of human health and the environment. A fundamental premise

underlying execution of that agreement was that through the USAF's substantial good-faith compliance with the procedures called for therein, reasonable assurances would be provided to the USEPA and FDEP as to the permanency of those remedies which included the use specific land use controls.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by the USAF, USEPA, and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent on CCAFS's substantial good-faith compliance with the specific land use control maintenance commitments reflected therein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.

WHAT IMPACTS WOULD THE CLEANUP HAVE ON THE LOCAL COMMUNITY?

There would be no impacts to surrounding communities because groundwater underlying CCAFS is not used for potable water. The natural attenuation and LTM alternative includes administrative actions to limit the use of groundwater until cleanup levels have been reached. Additionally, residential use of the Fire Station (Facility 1608) is not occurring nor is it expected in the near future. As long as CCAFS remains an active gateway for the aerospace industry, Facility 1608 is expected to continue operating in an industrial capacity.

Land use controls will be put in place to ensure that workers are adequately protected when engaging in activities that require contact with groundwater and that construction activities do not cause contaminant re-distribution.

WHY DOES THE 45th SW IRP TEAM RECOMMEND THIS REMEDY?

The team recommends the proposed remedy because the naturally occurring attenuation processes observed at the site are sufficient for the removal of low concentrations of pesticides. The LTM program will be used to assess and document reduction in contaminant concentrations to the cleanup goals. The land use controls will also prevent exposure to contaminants prior to the cleanup levels being achieved. The proposed remedy meets the four general standards for corrective measures.

NEXT STEPS

The 45th SW IRP team will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy into the CCAFS HSWA permit. If the proposed remedy is determined to be appropriate for implementation, then the LTM program will be continued, the land use controls will be initiated, and a LUCIP will be developed and incorporated into the MOA.



LAND USE CONTROL IMPLEMENTATION PLAN

CAPE FIRE STATION, FACILITY 1608 SOLID WASTE MANAGEMENT UNIT 88 (SWMU NO. 88) 45TH SPACE WING CAPE CANAVERAL AIR FORCE STATION BREVARD COUNTY, FLORIDA

Facility Description

Facility 1608, Solid Waste Management Unit 88 (SWMU No. 88), is located at the southern end of the industrial area of Cape Canaveral Air Force Station (CCAFS), Florida. The facility has undeveloped land to the south and east, and it is bordered to the northeast by Hangar H and to the west by the Central Security Control facility. Facility 1608 was built in 1958 and supports the operation and maintenance of fire fighting equipment and vehicles. The facility currently houses fire equipment, vehicles, and 24-hour fire fighting personnel.

Location

(Reference Site Map on last page of this document)

Site Plan Coordinate	Northing	Easting
North	1509518.93	790390.74
South	1509341.58	790242.69
East	1508982.27	790746.96
West	1509179.66	790901.17

Objective

Implementation of site-specific land use controls to protect against exposure to contaminated soil and shallow groundwater, to prevent consumption of the shallow groundwater, and to prohibit fishing on the site.

Land Use Controls (LUCs) to be Implemented:

Administrative:

- The property will be prohibited from residential or other non-industrial development without prior written notification to Florida Department of Environmental Protection (FDEP) and the United States Environmental Protection Agency (USEPA) concerning the SWMU land use change. Dependent on site conditions and the nature and intensity of the proposed land use change, additional site investigations and assessments could be required for the United States Air Force (USAF). Based on these analyses, additional remedial measures may be required prior to land use change.
- Perform and document baseline LUC audit upon finalization of the Statement of

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Basis.

- Perform and document quarterly LUC compliance inspections in accordance with 45th SW LUC Operations Manual.
- Perform, document, and report an annual audit on LUC implementation, maintenance, and compliance in accordance with the 45th SW LUC Operations Manual and the current CCAFS Corrective Action Management Plan (CAMP).
- The property Land Use Control Implementation Plan (LUCIP) shall remain in effect until:
 - a) changes to applicable Federal and State risk-based clean-up standards occur which indicate site contaminants no longer pose potential residential risk; or
 - b) reduction in site contaminant concentrations to below Federal and State residential risk-based clean-up standards occurs.
- In the event of property realignment, transfer, or re-use for non-industrial or non-commercial purposes, assessment and remediation may be necessary to ensure that impacts to ecological receptors are not increased or to mitigate potential ecological impacts where residual contamination exists.

Soil:

- Soils will not be disturbed or moved during property development, maintenance or construction, without:
 - a) USAF review, coordination, and approval of the proposed construction/development plans via AF Form 103 (Base Civil Engineer Work Clearance Request), 332 (Base Civil Engineer Work Request), 813 (Request for Environmental Impact Analysis), or similar process;
 - b) Ensuring proper engineering controls are in-place so that unauthorized release or disposal of the affected media does not occur. This includes conducting appropriate testing and developing a disposal plan in accordance with the LUC Operations Manual prior to off-site disposal; and
 - c) Use of proper personal protection equipment by site workers, as determined by the project proponent's occupational health and safety advisor.
- The site will be posted with proper warning signs in accordance with the LUC Operations Manual and the CCAFS Hazardous and Solid Waste Amendments (HSWA) Permit.

Groundwater:

- The consumptive use of the site's surficial aquifer groundwater will be prohibited.
- Incidental consumption and dermal exposure to groundwater from the surficial aquifer will be prevented. This will be addressed by the project proponent's health and safety advisor.
- Groundwater will not be contacted, pumped, or discharged during property development, maintenance, or construction, without:

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- a) USAF review, coordination, and approval of the proposed construction/development plans via AF Form 103 (Base Civil Engineer Work Clearance Request), 332 (Base Civil Engineer Work Request), 813 (Request for Environmental Impact Analysis), or similar process;
- b) Ensuring proper engineering controls are in-place so that unauthorized release or disposal of the affected media (groundwater) does not occur. This includes conducting appropriate testing and developing a disposal plan in accordance with the LUC Operations Manual prior to any pumping or discharge of groundwater; and
- c) Use of proper personal protection equipment by Site workers, as determined by the project proponent's occupational health and safety advisor.
- USAF will institute a long term monitoring (LTM) program of groundwater in the surficial aquifer in accordance with an approved long term monitoring work plan and the CAMP as part of the CCAFS HSWA Permit. Reports will be submitted annually, along with revised work plan recommendations, until such a time as the relevant regulatory agencies agree that contaminant concentrations in groundwater no longer warrant LTM.
- The site will be posted with proper warning signs in accordance with the LUC Operations Manual and the CCAFS HSWA permit.
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Surface Water/Sediment:

- USAF will institute an LTM program of surface water in accordance with an approved LTM work plan and the CAMP. Reports will be submitted annually, along with revised work plan recommendations, until such a time as the relevant regulatory agencies agree that contaminant concentrations in surface water no longer warrant LTM.

Statement of Basis:

The Statement of Basis (SB) is currently being reviewed. It is anticipated that the SB will be accepted/incorporated into the HSWA Permit, scheduled for issuance in November 2001.

Additional Information:

Long Term Monitoring Plan: Natural attenuation (NA) is evaluated through LTM. LTM will be implemented on a semi-annual basis for both groundwater and surface water. The scope and magnitude of the LTM program are reviewed and adjusted annually, based on the most recent data trends.

Pertinent Document Reference:

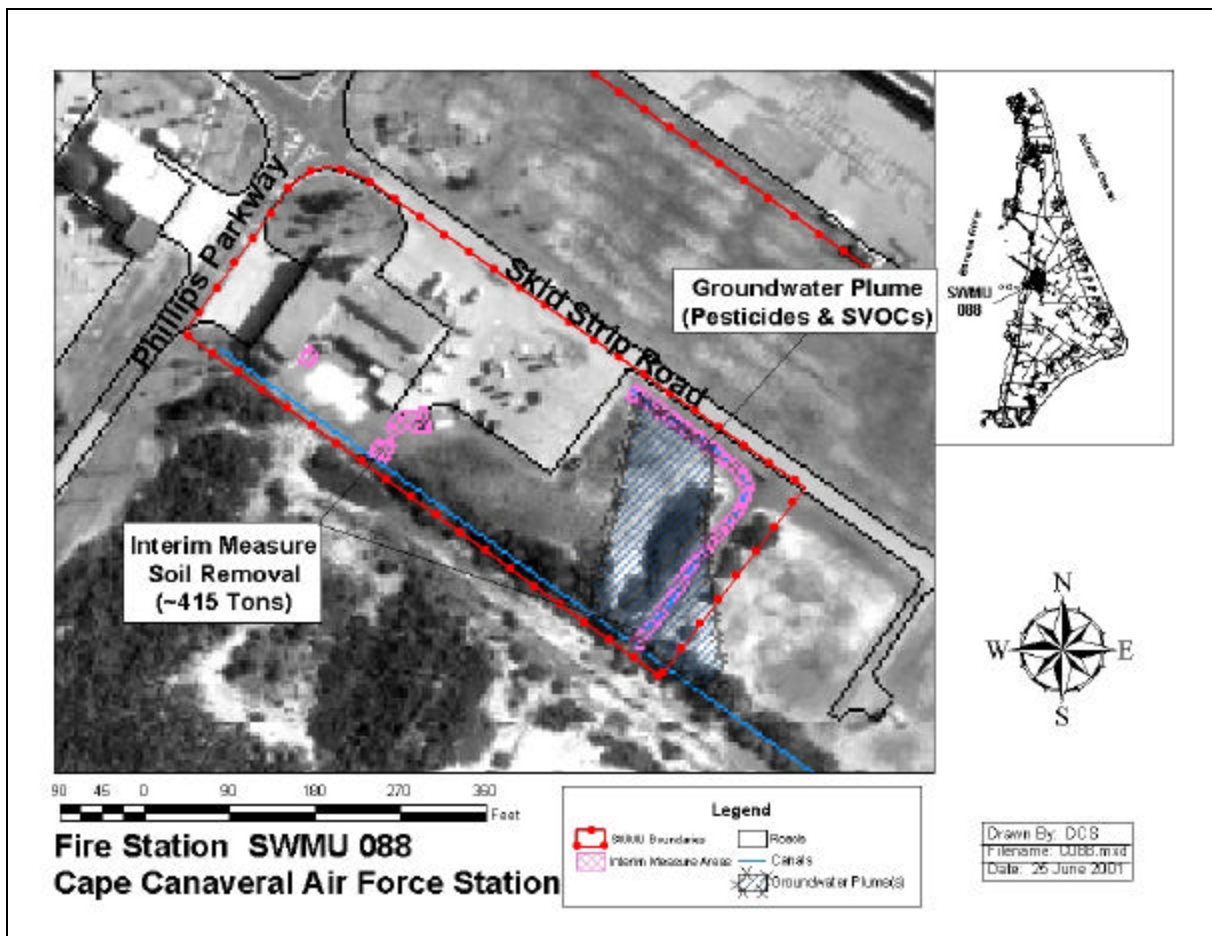
RCRA Facility Investigation/Interim Measure Report, Facility 1608, SWMU No. 88, Parsons Engineering Science, Inc., July 1999.

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Focused Corrective Measure Study Report/Long Term Monitoring Work Plan,
Facility 1608, SWMU No. 88, Parsons Engineering Science, Inc., August 2000.

Year 1 Semi-Annual Long Term Monitoring Report No. 1, Facility 1608, SWMU
No. 88, Parsons Engineering Science, Inc., December 2000.

Facility 1608 Fire Station—Site Map



Please contact the 45 SW Installation Restoration Program Office to obtain additional information, including: the 45 SW Land Use Controls Operation Plan; the CCAFS HSWA Permit; a complete record of corrective actions at Facility 1608; or other related documents, guidance, and regulations. The IRP office can be reached by phone at (321) 853-0965. Information can also be obtained via the IRP website at http://www.mission-support.org/45SW_IRP_EA